

Interview Summary

Applicants thank Examiner Torres Velazquez for her time during the telephonic interview of August 7, 2009. During the interview, the limitation, "the fiber length of the first fibre being smaller than that of the reinforcing fibre," was discussed in view of the cited references. Even though the cited references do not teach or suggest the relative sizes of the fibres, there was no agreement reached.

Remarks:

In reply to the Office Action of February 10, 2009, claims 39- 72 are pending after entry of this response. Claims 46 and 65 are hereby amended.

All of the claims have been rejected under 35 U.S.C. § 103 on the basis of a combination of Chenoweth et al. USP 4,946,738 ("Chenoweth") with Yokoo et al. US Publ. 2003/0104191A1 ("Yokoo").

All of the independent claims, claims 39, 58, 65 each recite "the fiber length of the first fibre being smaller than that of the reinforcing fibre." Paragraph [0008] of Applicants' published application indicates that "it is essential that, in the nonwoven mat, the melt fibres have a smaller fibre length than the reinforcing fibre." Paragraph [0009] of applicants' published application continues with "[a]s a result of the fact that the fibre length of the melt fibre is smaller than that of the reinforcing fibre, a homogeneous mixing of the two types of fibre is achieved so that, in the case of subsequent further processing of the half-stuff, a uniform homogeneous distribution of the reinforcing fibre in the fibre composite is then achieved." In other words, Applicants have found that a homogenous distribution of each of the fibres in an intermediate product, in order to achieve the thermoplast matrix in a final

product with the desired structural properties and dimensions, can only be achieved when the first, thermoplast fibres are smaller than the reinforcing fibers.

Chenoweth is silent as to any requirement of the relative length of the first, glass fibers in relation to the second, homogenous fibers or the third, bi-component fibers. On the other hand, Yokoo, paragraph [0023], describes a sheet having only one type of impregnated strand, where each of the strands is chopped to a predetermined length ranging from 10 to 150 mm. Yokoo further discloses disadvantages for having a strand length of less than 10 mm in the next paragraph. Consequently, Chenoweth and Yokoo do not disclose any fiber length selection criterion whatsoever that would lead one of ordinary skill in the art to this aspect of the Applicants' claimed invention.

Nevertheless, Applicants have amended claim 65 to better define the lengths of the fibres. The amended claims now recite that the first fibre length is between 2 mm and 6 mm, and the reinforcing fibre length is between 6 mm and 18 mm. Support for these amendments can be found in paragraphs [0010] and [0030] of the published application. No new matter is added.

Moreover, claim 39 also recites one embodiment of an intermediate non-woven mat comprising a first fibre made of a thermoplast and a second, reinforcing fibre being bonded together by a binder. When the intermediate mat is processed to a final product, such as the fibre composite of Claim 65, the thermoplastic first fibres melt and lead to a matrix of a thermoplast with the incorporating reinforcing fibres, or a thermoplastic mat. One embodiment of a method for producing such mat is found in Claim 58.

Unlike the Applicants' embodiments, the Chenoweth final product is a thermoset mat with glass fibers and two kinds of synthetic fibers. Specifically, the non-woven fibrous blanket of Chenoweth includes a matrix of glass fibers, a homogenous synthetic fiber, a bi-component synthetic fiber having a core coated with a sheath, and a thermosetting resin. The homogenous fibers can be made of various synthetic materials, while the bi-component fiber's sheath and core are made from polyester where the sheath polyester has a lower melting temperature than the core polyester. According to Chenoweth, "the thermosetting resin bonds the matrix [of the fibers] together," (col. 3, lines 8-9; col. 3, lines 26-30); col. 6, lines 1-13). In particular, the thermosetting resin bonds the fibers together at their points of contact, thereby providing the desired degree of rigidity and structural integrity after a heat cycle is applied to the matrix. This results in a final product of a thermosetting mat with glass fibers and two kinds of synthetic fibers, rather than a thermoplastic mat.

Applicants agree that Chenoweth is silent as to the basis weight of the non-woven material, and for this admitted deficiency, the Examiner cites Yokoo. Yokoo discloses a sheet comprising long-fiber-reinforced thermoplastic resin (L-FRTP) strands. Each of the L-FRTP strands comprises a reinforcing fiber, preferably glass fibers, that are impregnated with thermoplastic resins. During impregnation the thermoplastic resins penetrate the interstices between the monofilaments of the glass fibers to form the L-FRTP strands. After impregnation, the L-FRTP strands are chopped into predetermined lengths of 10-150 mm. The L-FRTP strands are then subject to pressureless hot-melt adhesives or to hot-melt compression bonding under pressure to form the sheet having a basis weight from 30 – 500 g/m².

Applicants respectfully submit that Chenoweth and Yokoo are not combinable for teaching the weight of the non-woven mat of the claimed embodiments for at least the following reasons. (1) The mats in the two references are made of entirely different compositions. Chenoweth as explained earlier comprises a reinforcing fiber, two synthetic fibers, and a thermosetting resin, while Yokoo comprise only one reinforcing fiber impregnated with a thermoplastic resin. (2) The final product are two different types of plastics. Chenoweth results in a thermosetting mat, while Yokoo results in a long fiber reinforced thermoplastic sheet. Thus, for these reasons one of ordinary skill in the art is not prompted to combine the basis weight of Yokoo to the mat of Chenoweth for the claimed embodiment.

Claim 45 has been rejected under 35 U.S.C. § 103 on the basis of a combination of Chenoweth with Hiscock WO Publ. WO 87/04476. Claim 45 is dependent of claim 39, which the shortcomings of claim 39 have been discussed herein. Hiscock also does not disclose any fiber length selection criterion whatsoever to make up for the deficiencies of Chenoweth.

To conclude, Applicants' claims are believed to be patentable over the art of record. Should the Examiner feel that some minor change to the claims, which could be addressed by an Examiner's amendment, would place this case in condition for allowance, the subscribing attorney would welcome a phone conference.

Respectfully submitted,

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Date

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